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General Characteristics

Physical Characteristics

Appearance

BISON ARE GENERALLY dark brown in color, almost black when a new coat is growing in during summer. The head, forelegs, hump, and shoulders are covered with longer hair (about 6 inches on shoulders and hump), but the hair on the flanks and hindquarters is much shorter (about 1 inch), so that some bison look as though they had been clipped (Fig. 14). As the coat ages, the longer hair over the hump and shoulders may lighten considerably, becoming almost tan on some animals, particularly older bulls. Shedding of old hair begins in spring, but many bison still have ragged patches of lighter-colored, old hair in mid-summer, particularly on the shoulders (Fig. 15). Wisps of this crinkly, shedding hair are commonly seen on trees and bushes (Fig. 16).

Calves are reddish tan at birth (Fig. 17) but begin to lose this first coat and change to brown-black at about 3 months (Fig. 18). By about 5-6 months of age calves are completely dark. The occasional red one seen in the fall is a late-born calf.

Males and females generally resemble each other in color, shape, and presence of permanent horns. Both sexes have the shoulder hump (calves do not) which, together with the longer hair on the foreparts and head, give a massive appearance to the front of the body compared with the hindquarters. Bison are, however, sexually dimorphic (different in appearance); older animals can be differentiated by an observer (Figs. 19-22). Horn size and shape is characteristic; additionally, bulls are larger and the head shape is broader and generally more massive. The contrast between areas of long and short hair on bulls is more marked.

Weight

Weight differences are greatest between male and female adult bison. Weights (except adult bulls) were recorded in Yellowstone during the winters of 1964-65 and 1965-66, when adults weighed less (indicated by sequential winter

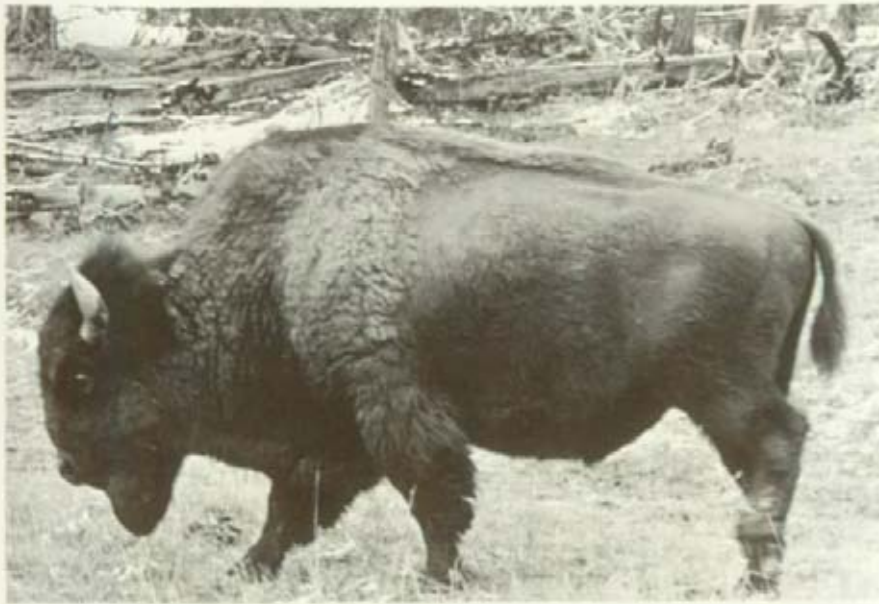


Fig. 14. Clipped appearance of a mature bull. Photo by M.D. Beal, Yellowstone National Park.

weight records) than they would in the fall. Estimates of maximum bull weights of 2000 pounds were made by experienced observers. Most adult cows weighed between 800 and 1100 pounds. Yearlings of both sexes usually weighed between 500 and 700 pounds, calves (8-9 months old), between 300 and 400 pounds. Weights at birth have not been recorded here; Park (1969) gives a range of 30-70 pounds.

No record was made of the weight of the Yellowstone bull

(Fig. 23) whose skull is still the largest listed in the records of the Boone and Crockett Club (1964). This animal, a member of the Buffalo Ranch herd (see History) was shot in 1925 after he became too dangerous for the semiranching operation of the time. Old park files indicate he was the offspring of one of the plains bison cows which was pregnant when brought to Yellowstone in 1902. Hence this bull was of plains bison stock, rather than a hybrid offspring of plains and mountain bison.

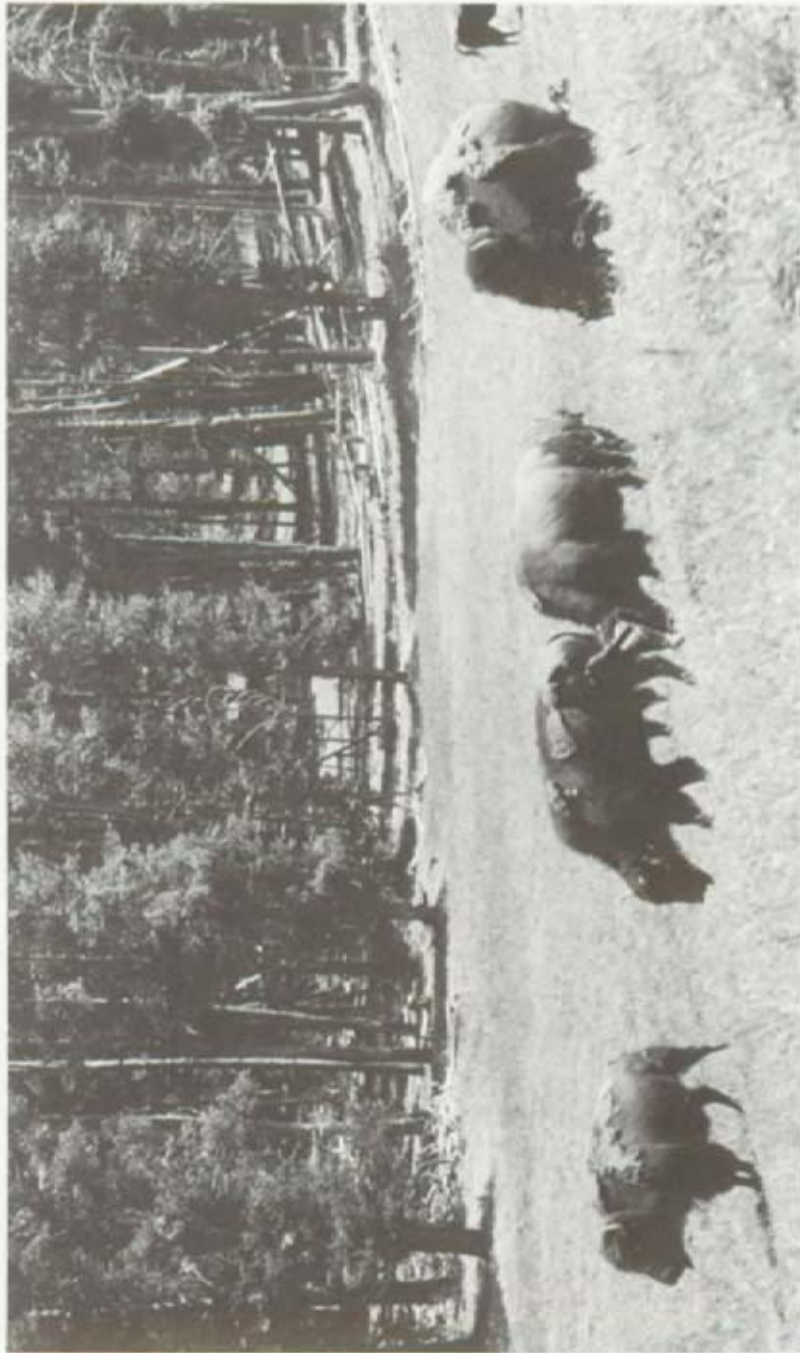


Fig. 15. Bison shedding old hair, mid-summer.



Fig. 16. Wisps of shed bison hair on a branch of a lodgepole pine.



Fig. 17. Newly-born calves in a mixed herd group. Photo by Verde Watson, Yellowstone National Park.



Fig. 18. The calf (5-6 months old) to the left of the cow has lost its first red-brown pelage. Photo by David Condon, Yellowstone National Park.

Fig. 19. Note head shape and relative size of the cow, left center, compared with the bull at right. Photo by David Condon, Yellowstone National Park.





Fig. 20. Spike-horn bull, approximately 2.5 years old. Photo by David Condon, Yellowstone National Park.



Fig. 21. Standing animals, from left: spike-horn bull, yearling female (approximately 1.5 years old), cow, cow, cow, bull. Photo by David Condon, Yellowstone National Park.

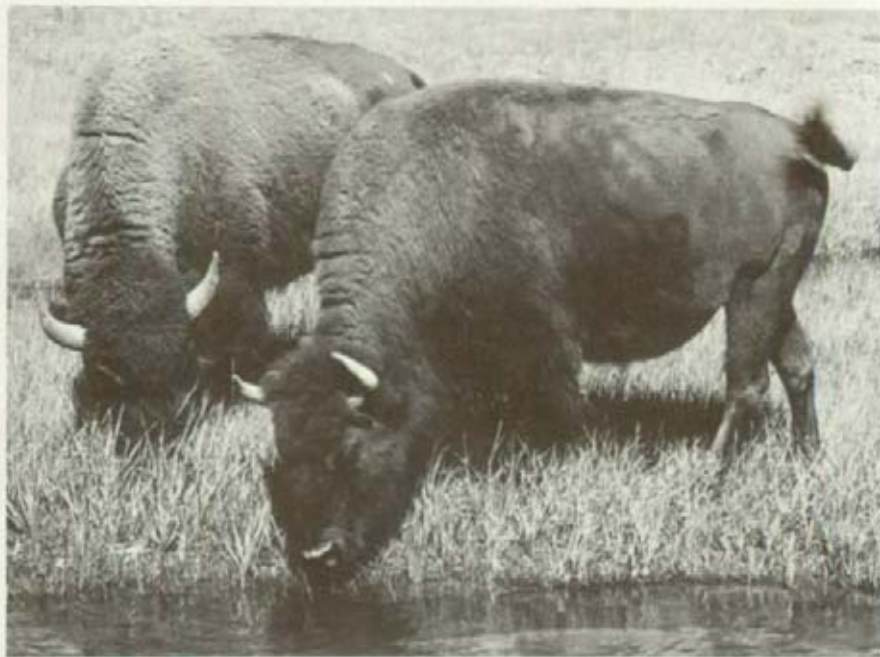


Fig. 22. The horns of the adult cow (at right) are relatively slender compared with those of bulls. The spike-horn bull at left is approximately 3.5 years old. Photo by David Condon, Yellowstone National Park.



Fig. 23. Old Tex, the Yellowstone bull whose head is still first among record bison heads listed by the Boone and Crockett Club (1964). Photo by James Kimberlin, Yellowstone National Park.

Life span

Longevity in a wild bison population is usually less than that of animals in zoos and other protected circumstances. Longevity may also vary among wild populations. In Yellowstone, relatively few members of the population attain old age, which probably begins at 12-15 years of age (Fuller 1959). An occasional one of these aged bison is probably more than 20 years old (from Yellowstone trap records of 1964-65 and 1965-66).

Behavior Characteristics

Grouping characteristics

Bison are gregarious animals usually found in groups of various sizes, although there are scattered solitary bulls at all season. The vast herds (of plains bison) commonly mentioned by historians are not seen in Yellowstone. Small bands, typical of the original mountain bison population (as described by early travelers), are also characteristic at present. During the higher population levels of the 1950s, McHugh (1958) found that cow (mixed) group size ranged from 10 to 50 in Lamar during the winter, with a mean of 20. During the rut in Hayden Valley, he observed a range of 19-480, with a mean of 175.

At population levels of the present study, small winter groups were also characteristic; during

summer, groups of more than 100 were rare. The occasional melding of smaller herd units into a much larger group usually resulted from disturbance by people or aircraft. Typically, even when 100 or more animals were in sight at once in Hayden Valley during the summer, they were in two or more subunits which were often close together, but did not actually form one large herd. However, during the rut, the subunits sometimes melded although they were not disturbed.

Although mature bulls were commonly seen in the mixed groups at all seasons, many bulls were separate from these groups. Some bulls (not always old animals) were solitary, but pairs and small groups up to four and five were common, particularly in winter. Occasionally a cow was seen with a bull group. Such cows were without calves at the time, but were not always old or barren as McHugh observed. Younger cows were seen in bull groups several times; one (a crippled cow) was seen with a calf after wintering with a bull group.

Small bands appear to be the basic population unit, but the nature of these bands is not clear. Fuller (1960) considered the observations of various writers and concluded that there was a basic unit of some sort, centering around 11-20 individuals. McHugh (1958) concluded that subgroup and group formation

was flexible, with little dependence on blood relationship (except the cow with calf).

Behavior in specific circumstances

Historical references often mention that bison face into the wind during snowstorms. This may have been very common among plains bison when no shelter was available. Conditions which prevail during severe snowstorms in Yellowstone permitted few observations during this study, but bison, when visible at all, were not seen standing head into the wind. Rather, they were bedded in the snow, usually in whatever protection small variations in terrain offered. At times they were seen moving with the wind, sometimes into the trees at the edges of the wintering valleys. Dave Pierson (1971 pers. comm.) states that during the Buffalo Ranch operation in Lamar he often saw bison on the open feedgrounds facing into the most severe winter storms.

During the breeding season (rut), bulls engaged in considerable head shoving, but actual battles were never witnessed. Fuller (1960) witnessed shoving matches between bulls, but most encounters were decided by threats. McHugh (1958) described battles but did not state that these were between unfenced bison bulls. The bulls do a great deal of bellowing,

along with horning of trees and ground, and more wallowing than is observed at other times. Bulls do not dominate groups of cows as a harem unit, as do elk (*Cervus canadensis*), but are usually part of a mixed herd group along with other bulls of various ages. There was no evidence from this study that solitary bulls were forced away from mixed groups.

Bison are very agile, being able and willing to traverse fallen trees and steep slopes with speed. They are capable of a top speed of 30-35 mph (Fuller 1960) and are strong swimmers. Although large, they readily disappear in the forest, blending with the darkness of lodgepole pines.

Senses and disposition

Bison use the senses of smell, hearing, and sight. The sense of smell is well developed, and bison reaction to the odor of an observer is often more marked than reaction to sight or sound. Bison are typically alert and are wary of an observer whether seen or heard, but a careful approach to a viewpoint is often possible if the wind has not carried the scent to them. After an observer is scented, flight is usually immediate for at least a short distance.

Sight more frequently causes flight than does sound, and an observer sighted on foot is more disturbing than one on horseback.

TABLE 8. *Opportunities to see bison from present park roads.*

Time of year	Location and frequency	
	Bulls	Herd groups
Winter, spring (thru May)	Lamar: west of Lamar Canyon and Soda Butte ^a Firehole Geyser Basins ^a Hayden Valley ^a Mary Bay	Lamar: especially west of Lamar Canyon ^a Lower Geyser Basin
June	Hayden Valley Firehole, particularly the Lower Geyser Basin and near Old Faithful Mary Bay	occasionally frequently early June only
July, early August	Hayden Valley	frequently
Mid-August to mid-September	Lower Geyser Basin Hayden Valley Lamar	frequently frequently occasionally
After mid-September	Same as above	Lower Geyser Basin
Late fall (roads still open to conventional vehicles)	Lower Geyser Basin Hayden Valley Mary Bay	Lower Geyser Basin Lamar Hayden Valley
		occasionally frequently occasionally rarely

^aVia oversnow vehicle until the roads are plowed in the spring.

Note: In the Lower Geyser Basin, two side roads—Fountain Flat and Firehole Lake—in addition to the main road all provide opportunities to see bison.

In winter a skier is usually detected as soon as in view of a herd, although the skier may be a mile or more away. However, if the skier uses white clothing, approach to less than 100 yards is sometimes possible unless scent disturbs the bison.

One exception to the usual wariness of bison is common. Solitary bulls are probably as aware of an observer in a given set of circumstances as is a group of bison. However, these bulls are much more inclined to stand their ground, particularly near roads, where they are more accustomed to people. Their tolerance of approach is misleading; they are not aggressive, but when approach is beyond tolerance, they will depart. The line of departure may be through or over unwary people who sometimes nearly surround one of these bulls.

Observations made during this study concur with those of Fuller (1960), who reported that bison were neither aggressive nor unpredictable. He characterized the mixed herds as usually shy and timid and used the term "stolid

indifference" for the bull groups. All bison should be viewed from a respectful distance.

Visitor opportunities to see bison

Bison behavior and habits (see Movements) influence opportunity to see them from park roads (Table 8). Such viewing is best done from a vehicle, to minimize disturbing the animals and destroying the opportunity for others to watch.

The visitor who is able and willing to penetrate the wilderness of Yellowstone on foot or horseback may, with luck, see the herd groups on their summer ranges. The herd groups in Yellowstone can be characterized as very elusive and very mobile, and a sight of them is not always possible even for the experienced observer. But the opportunity to watch a group of truly wild bison, living as they have for generations in this high mountain wilderness, is an experience to be remembered and cherished.